STATEMENT OF

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Madam Chairman and distinguished Members of the Subcommittee, thank you for the opportunity to participate in this hearing and to discuss the role of strategic and critical minerals in our national and economic security. The broad importance of these minerals is often overlooked and misunderstood. Minerals are important to our security and economy. They are the stuff of which our material infrastructure is built.

There is a common misperception that minerals can be found anywhere and that there will never be a problem with sources of these fundamental commodities. I'd like to talk with you today about the U.S. history of mineral supply-and-demand issues and the work the U.S. Geological Survey (USGS) does to provide the Nation's policymakers with reliable, current information that helps sustain the economy and maintain security.

The United States government has a long history of concern about access to the minerals necessary to the functioning of its economy and maintaining a strong national defense. Two hundred years ago, when President Jefferson wrote Merriwether Lewis concerning his exploration mission to the Pacific Northwest with William Clark, he instructed them to observe "mineral production of every kind…." Twenty years later, in 1833, George Featherstonhaugh, an English-born geologist, wrote a letter to Secretary of War Lewis Cass expounding on the benefits of dedicating public funds to expand the Nation's knowledge of its mineral resources. He wrote, "It is difficult to form an estimate of the great disadvantages any country lays under, precluded from a correct knowledge of its own mineral resources; and this remark may be especially applied to the United States."

Congress recognized the importance of strategic and critical minerals when it enacted The Domestic Minerals Program Extension Act of 1953, which remains in force. This Act states, "It is recognized that the continued dependence on overseas sources of supply for strategic or critical minerals and metals during periods of threatening world conflict or political instability within those nations controlling the sources of supply of such materials gravely endangers the present and future economy and security of the United States. It is therefore declared to be the policy of the Congress that each department and agency of the Federal Government charged with responsibilities concerning the discovery, development, production, and acquisition of strategic or critical minerals and metals shall undertake to decrease further and to eliminate where possible the dependency of the United States on overseas sources of supply of each such material."

The difficulty in gaining an understanding of the mineral production of the United States during the first half of the 19th century is the legacy of multiple independent government reports on the mineral resources of individual mining districts. At the close of the 19th century, the United States was largely thought to be abundantly endowed with mineral resources. By the first decade of the 20th century, this view was changing and the country began to focus on managing and conserving its natural resources. In 1879, Congress created a single organization, the U.S. Geological Survey, to provide the Nation with knowledge about its

mineral resources and the state of their development. Among its first activities, the USGS created a Mining Statistics Division to collect and disseminate information about the Nation's mineral production and to investigate the geology of and the technology employed at several important mining districts.

This vital mining statistics function was transferred from USGS to the U.S. Bureau of Mines (USBM) in 1925 and returned to USGS by the U.S. Congress in 1996. The mineral statistics program was expanded at the USBM as demand increased for minerals data, particularly by defense and emergency preparedness agencies.

Significant concerns about access to strategic and critical minerals arose after World War I when the Nation recognized that it was not self-sufficient in all of the minerals it needed. The implications of being a net importer of minerals and the need to develop elements of a national mineral policy gained the attention of government decision makers and scholars. The onset of World War II brought home to the country its vulnerability to disruptions in the supply of critical mineral commodities. These concerns were heightened by the dawning of the atomic age, as the United States had become a net importer of many minerals. The rise of a communist government in China and the termination of access to Chinese tungsten, as well as the onset of hostilities in Korea, which was also a significant source of that metal, raised concerns about the vulnerability of the United States to disruptions of minerals supplies.

The Federal Government took a number of actions to address the fears about access to strategic and critical minerals. These actions included creating a program of Government loans to encourage exploration for such minerals (the Grubstake Loan Program of the Defense Production Act of 1950, the Defense Minerals Exploration Administration, and successor programs in the USGS), establishing government stockpiles of a wide variety of minerals, and appointing the President's Materials Policy (Paley) Commission. In 1952 the Commission produced a report that documented the Nation's mineral position and made recommendations to address mineral-supply problems.

Following the Korean Conflict, however, minerals were in surplus rather than shortage, and public interest in assuring sources of mineral supplies ebbed. By 1956, even uranium was in oversupply, thanks in part to government efforts to spur exploration and production of that mineral.

However, access to minerals remained a concern of the United States throughout the Cold War. In the late 1970s, guerrilla activity in Shaba Province, Republic of Congo (then Zaire), caused cobalt prices to rise precipitously. Heightened tensions with the Soviet Union in the early 1980s fueled apprehensions about a "resource war" and global competition for resources. Some experts cited mineral resources as one of the dominant factors that led the Soviet Union to invade Afghanistan. This view reflected the broader concern that, if the Soviet Union were in a position to do so, it would deny the United States access to foreign supplies of minerals critical to defense systems or to the U.S. economy.

In 1973, USGS published the first overall assessment of mineral resources of the United States since the 1952 Paley Commission report. Planning by the U.S. Government again focused on access to strategic and critical minerals, support for geologic studies of particular strategic and critical minerals, and the maintenance of adequate stockpiles of materials to meet projected national emergencies.

In addition to undertaking geologic studies of strategic and critical minerals, USGS began in the 1970s to develop consistent, probabilistic techniques for estimating potential for as-yet undiscovered deposits of essential minerals. These techniques were first applied in the United States and used to assist Federal land managers in considering mineral values as a part of land management plans. In the 1990s, USGS conducted the first-ever probabilistic assessment of the entire United States to determine potential for undiscovered deposits of gold, silver, copper, lead, and zinc. The study concluded that "there is every reason to believe that, for conventional-type deposits that contain gold, silver, copper, lead, or zinc, about as much is left to be discovered in the United States as has already been discovered" and reported the estimated total resources of these five metals. USGS will update this assessment periodically as changes occur in minerals utilization, adding economic and environmental analyses when feasible.

Recent Developments and the Present Situation

The end of the Cold War and the breakup of the Soviet Union in 1991 resulted in a lessening in concerns about access to strategic and critical minerals and a decrease in the size and composition of stockpiles. This was based on the assumption that in future emergencies, the United States would have ready access to foreign sources of minerals. Recent events have called that assumption into question. The Federal

government continues to maintain stocks of a large number of critical mineral materials such as such as bauxite, chromium, cobalt, columbium, diamond, fluorspar, germanium, graphite, iodine, manganese, mica, palladium, platinum, and tantalum.

The United States imports 100% of such important mineral materials as bauxite, columbium, indium, manganese, and vanadium; and is a net importer of chromium, cobalt, platinum-group metals, and tantalum (see tables 1 and 2). In addition, the United States imports an increasing quantity of mineral materials we once exported. Many of these materials are important components of defense systems or are used in technically sophisticated products, including super alloys in jet aircraft, electronic components, such as capacitors for personal computers and cellular telephones, and semi-conductors. Data collected since 1978 demonstrate that the value of imports of mineral materials has increased faster than the value of exports (figure 1).

Just as the end of the Cold War prompted major changes in defense planning and foreign policy, it also marked a major change in global economies, including the United States. Increased globalization will likely increase global interdependence on mineral supplies, as minerals are mined in one country, processed in another country, and turned into manufactured goods in yet other countries.

Information about both our domestic and global mineral resources remains vital to meeting the economic and national security challenges that the Nation faces. In response to this need, USGS provides information on production and consumption of 100 mineral commodities domestically and in 180 countries. At the same time, USGS conducts research and assessments designed to provide a scientific basis for understanding the Nation's domestic and global mineral resource position. The information provided by USGS is a public good, providing valuable information to market participants that would not be obtained in a private market. Such information is also important should foreign sources become prohibitively expensive in a time of crisis.

In 2002, USGS scientists began a USGS-led, internationally coordinated project to assess potential for undiscovered nonfuel mineral resources on a global scale. The primary objectives of this multi-year project are to outline the principal land areas in the world that have potential for selected undiscovered mineral resources and to estimate the probable amounts of those resources to a depth of 1 kilometer below the Earth's surface. The first priority for the project has been identifying and formalizing relations with other countries and multinational organizations around the world. In addition, USGS is preparing reports on regional geology, recent exploration, significant mines and mineral resources, major past and current production, and supply-demand conditions. These reports will be available beginning in early 2004.

Future Concerns

As developing nations grow, demand on known resources will increase rapidly. For example, among the most dramatic recent changes has been the emergence of the Peoples Republic of China as a major participant in minerals markets. China currently supplies the United States a large number of mineral commodities including: antimony, barite, fluorspar, graphite, indium, magnesium, niobium, rare earths, tantalum, tin, tungsten, and yttrium. However, China's internal consumption of minerals is rising rapidly. China's consumption of copper recently exceeded 1 million tons per year and China will likely be the largest consumer of copper in the world before 2020. China is changing from a country that exports many minerals to one that imports increasing amounts and varieties of minerals. As China and other developing nations grow, trade balances in many mineral materials will shift. The U.S. needs to anticipate these shifts and be prepared with long-term strategies.

Many organizations and agencies need information concerning mineral resources provided by USGS. These organizations include: land management agencies, the Federal Reserve Board, numerous Department of Commerce agencies, and the Departments of State and Defense. Private sector groups, such as industry trade organizations and non-governmental agencies, are also frequent customers and partners. In closing, I would like to reiterate how important minerals are to our security and our economy. They are the stuff of which our material infrastructure is built.

Thank you for this opportunity to testify. I will be pleased to respond to any questions you may have.